

A NEW SPECIES OF *ERYTHROXYLUM* (ERYTHROXYLACEAE)
FROM SURINAME AND VENEZUELA

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In conjunction with his updating of the Flora of Suriname, J. C. Lindeman of Utrecht recently sent me two specimens of an *Erythroxylum* from Suriname that did not match any known species from that country. Subsequently I found this to be an undescribed species that matched several collections from southern Venezuela.

Erythroxylum lindemanii Plowman, sp. nov. Fig. 1.

Frutex vel arbor parva, ramulis rectis, tegumento cereo obtectis. Cataphylla disticha, stipulis foliorum similia. Stipulae foliaries persistentes, parvae, triangulari-ovatae, subcoriaceae, leviter striate nervosae, 3-setulosae. Folia petiolata, decidua; laminae ellipticae vel oblongae vel suborbiculares, chartaceae, ubique impolitaе, apice rotundatae retusae, basi obtusae vel rotundatae vel abrupte acuminatae. Flores pauci e brachyblastis vel ramulis hornotinis in axillis cataphyllorum nati. Petali lamina ovata, ad medium crassiuscula, concava, marginibus latis, tenuibus, recurvatis, ligula bilobata munita. Urceolus stamineus calycem aequans vel paulo superans, margine integer vel minute 10-crenulatus. Styli liberi. Drupa ellipsoidea vel ovoidea, apice rotundata, endocarpio anguste ovoideo tereti longitudinaliter nervoso uniloculari, endospermio mediocri.

Shrub or tree to 7 m tall with trunk to 10 cm diameter near base. Branches arising from near ground, extending vertically and horizontally. Branchlets distichous, consisting mainly of short shoots, straight or somewhat flexuous, diverging 45° - 80° from axis, lightly compressed at apex, 1 - 1.5 mm in diam, reddish brown, longitudinally wrinkled, becoming covered with a silvery waxy coating, rarely with small, punctate lenticels. Internodes on long shoots 1 - 25 mm long, on short shoots 0.5 - 4 mm. Cataphylls (ramenta) distichous, produced at base of new shoots for up to 5 mm, similar to but firmer than foliar stipules, turning reddish brown in age, the spinule dorsally flattened, lanceolate, 0.6 - 1 mm long. Foliar stipules

persistent, appressed to stem, broadly triangular to triangular-ovate, 1 - 1.7 (2.5) mm long, subcoriaceous, often covered with waxy flakes when new, striately nerved (though sometimes obscurely so), with 2 - 3 (5) nerves per side, obtuse to truncate at apex, 3-setulose, the lateral setae 0.2 - 0.8 mm long, the medial seta 0.1 - 0.2 mm long, sometimes wanting, the seta evanescent, the keels rib-like or sub-alate, the margin entire, rarely finely erose-denticulate. **Leaves** deciduous, 1 - 2 produced at apex of short shoots or scattered on long shoots, distichous, petiolate, the lamina plane, elliptic to ovate, oblong or suborbicular, rounded and usually retuse at apex, obtuse to rounded, acute or abruptly short-acuminate at base, sometimes slightly revolute at margin, 25 - 86 mm long, 15 - 42 mm wide, chartaceous, adaxially medium green, abaxially very pale greyish or yellowish green, dull to slightly shiny on both surfaces, elineate with no distinct central panel, the adaxial midrib slender, depressed in surface, drying ochreous to orange, the abaxial midrib drying yellowish to orange, the lateral nerves 11 - 14, diverging 45° - 70° from midrib, straight or slightly crooked, anastomosing 2 - 5 mm from margin, more or less distinct on both surfaces with finely reticulate veinlets. **Petiole** 3 - 7 mm long, 0.5 - 1 mm in diam, subterete in cross-section, narrowly canaliculate, drying ferruginous to dark brown. **Flowers** produced on new shoots in axils of cataphylls or rarely in leaf axils, 1 - 3 (5) flowers per node, creamy white, sometimes with a very short peduncle to 0.5 mm long. **Bracteoles** ovate to triangular-ovate, concave, 0.6 - 1 mm long, membranaceous, acuminate at apex, the seta 0.1 - 0.3 mm long. **Pedicel** slender, 5-ribbed, 4 - 6 mm long, 0.5 - 0.8 mm in diam, thickened slightly at apex. **Calyx** 1 - 1.5 mm long, divided 1/3 to 1/2 its length, the lobes short, transversely triangular, 0.3 - 0.8 mm long, acute to abruptly short-acuminate at apex, the margins much lighter in color than the middle. **Petal** lamina concave and thicker in texture in middle with broad, thin, recurving margins, ovate in outline, rounded at apex, 2 - 2.6 mm long, 1 - 1.7 mm wide, the claw 1 - 1.2 mm long, the ligule bilobed, 1 - 1.5 mm long, each lobe consisting of two auricles, the shorter anterior auricle rounded, 0.4 - 1 mm long, the longer posterior auricle ovate, 1 - 1.5 mm long, the auricles separated by a broad, inflexed anterior medial flap and a short, erect, posterior medial appendage. **Staminal cup** equaling to 1.5 times length of calyx, 0.8 - 1.3 mm long, the margin entire or minutely 10-crenulate. **Brachystylous flowers:** filaments ca. 3.2 mm long, strap-shaped, narrowed towards apex, the anthers orbicular

or elliptic in outline, often with somewhat unequal thecae, 0.5 - 0.6 mm long; styles free, 1.2 mm long; stigmas depressed-capitate, 0.2 mm long. **Dolichostylous flowers:** antisepalous filaments 0.6 - 0.9 mm long, the anthers suborbicular, with somewhat unequal thecae, 0.5 - 0.7 mm long; antipetalous filaments 1 - 1.7 mm long, the anthers smaller, 0.4 - 0.6 mm long; styles free, 2 - 2.5 mm long; stigma depressed-capitate, 0.1 - 0.3 mm long. **Ovary** narrowly ellipsoid, truncate at apex, 1.3 - 1.5 times length of staminal cup, 1.3 - 1.5 mm long. **Drupe** ovoid-ellipsoid, rounded at apex, ca. 8 mm long, ca. 4 mm in diam, yellow becoming light red at maturity, the mesocarp thin, the endocarp narrowly ovoid, 7.5 mm long, 3.5 mm in diam, terete, longitudinally nerved, unilocular, the endosperm occupying ca. 40% of locule. **Embryo** ca. 5.3 mm long, the cotyledons elliptic, subcordate at base, 5 mm long, 3 mm wide, 0.7 mm thick; radicle 1 mm long.

TYPE: Venezuela, Territorio Federal Amazonas, Depto. Átures, 51 km NNE of Puerto Ayacucho along the road to El Burro, laja near La Esperanza; elev. ca. 100 m; 5°59'N, 67°22'W, 21 April 1978 (fl), G. Davidse and O. Huber 15450 (holotype, F 1895307; isotypes, MO 2713735, VEN 133958).

ADDITIONAL SPECIMENS EXAMINED: SURINAME: area of Kabalebo Dam project, distr. Nickerie, 4° - 5° S, 57°30' - 58° W, alt. 30 - 130 m, savanna forest bordering on rock pavement E of km 117, "gujave," 18 Sept 1980 (st), J. C. Lindeman et al. 474 (F, U, Uw 26454), same locality, 9 Nov 1981 (fr), J. C. Lindeman & A. C. de Rooy 793 (F, U).

VENEZUELA: Territorio Federal Amazonas, Dept. Átures: road northeast from Puerto Ayacucho towards El Burro, km 56 from Puerto Ayacucho, extensive granitic laja outcrop west of road, 28 Apr 1984 (fl), T. Plowman & F. Guánchez 13760 (F, TFA, VEN, 6 duplicates to be distributed); 35 km south of Puerto Ayacucho at the "Tobogán," on large igneous outcrop bordering forest, on flat ground at base of laja in tree island, alt. 85 m, 4 May 1977 (fl), J. A. Steyermark & O. Huber 113866 (US, VEN).

ETYMOLOGY: This species commemorates Dr. J. C. Lindeman of the Institute of Systematic Botany, Utrecht, who has made valuable contributions to our knowledge of the floras of Suriname and Brazil.

DISTRIBUTION: Known only from two rather disjunct areas: Puerto Ayacucho in southern Venezuela and the Nickerie District in Suriname. Future collecting in similar

habitats in the remote regions between these two areas will undoubtedly turn up additional stations.

PHENOLOGY: In Venezuela, flowering during April and May. In Suriname, the only fertile collection was fruiting in November.

ECOLOGY: All collections of *Erythroxylum lindemanii* have been made in forest margins or tree islands on large granitic outcrops, called "laja" in Venezuela. In the area around Puerto Ayacucho, at least four species are restricted to this habitat and occur sympatrically with *E. lindemanii*. These are *E. impressum* O. E. Schulz, *E. williamsii* Standley ex Plowman, *E. rufum* Cav. and another undescribed species (Davidse & Huber 15072, 15187, 15280, 15593, Steyermark & Huber 113852, 122557, Plowman & Guánchez 13505, 13506, 13507, 13508, 13509, 13510, 13511, 13512, 13731, 13750). The latter will be described in a forthcoming paper on additional new species from Venezuela.

COMMON NAME: Gujave (Suriname).

RELATIONSHIPS: *Erythroxylum lindemanii* belongs to section *Rhabdophyllum* based on the presence of stipular nerves with sclerified vascular bundles. However, in this species, the nerves are few in number, sometimes not well developed, and therefore are not readily observed in some specimens. It is easiest to observe the stipular nerves in older, dried stipules where the nerves tend to protrude. This species has no known close relatives and would seem to be allied to one of several species groups of sect. *Rhabdophyllum* found in central and eastern Brazil.

Erythroxylum lindemanii superficially resembles several other species from the Guayana Shield, including the sympatric laja endemics mentioned above, and it may be easily confused with them. It differs from *E. impressum*, *E. williamsii*, and the undescribed species mentioned above (all sect. *Archerythroxylum*) in having striately nerved stipules. *Erythroxylum rufum*, of sect. *Rhabdophyllum*, differs from *E. lindemanii* in having blackish twigs with conspicuous light-colored lenticels, the flowers produced at "knobby" nodes on the past (not current) season's growth, and pedicels at least 10 cm long. It is of interest that *E. rufum* also occurs on igneous outcrops in north central Brazil. It is unlikely that *E. lindemanii* would be easily confused with any other species of sect. *Rhabdophyllum* known from the Guayana Region.

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EXPLANATION OF FIGURE

Fig. 1. Erythroxylum lindemanii. A, habit of flowering branch; B, habit of fruiting branch, same scale as A; C, leaf showing venation; D, stipule; E, short-styled flower; F, long-styled flower; G, petal; H, fruit, same scale as I; I, endocarp; J, embryo, same scale as I; K, cross-section of endocarp, same scale as I. (A, C, D, F and G from Davidse & Huber 15450; B, H, I, J and K from Lindeman & de Roon 793; E from Steyermark & Huber 113866).

